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THE UNITED STATES OF AMERICA

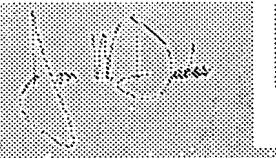
UNITED STATES DEPARTMENT OF COMMERCE  
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November 15, 2004

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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A  
FILING DATE.

APPLICATION NUMBER: 60/510,564  
FILING DATE: *October 10, 2003*  
RELATED PCT APPLICATION NUMBER: PCT/US04/33410

Certified by



Jon W. Dudas

Acting Under Secretary of Commerce  
for Intellectual Property  
and Acting Director of the U.S.  
Patent and Trademark Office



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**PROVISIONAL APPLICATION FOR PATENT COVER SHEET**

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

EU379273749US

U.S. PTO  
101003101003  
101003**INVENTOR(S)**

Given Name (first and middle if any)	Family Name or Surname	Residence (City and either State or Foreign Country)
Duane L.	Johnson	Bozeman, MT
Bettie C.	Stanislao	Bozeman, MT
David C.	Sands	Bozeman, MT

 Additional inventors are being named on the \_\_\_\_\_ separately numbered sheets attached hereto**TITLE OF THE INVENTION (500 characters max)**

A Gluten-Free Cereal for Human Nutrition

Direct all correspondence to:

**CORRESPONDENCE ADDRESS**

Customer Number    → Place Customer Number Bar Code Label here  
 OR Type Customer Number here

<input checked="" type="checkbox"/> Firm or Individual Name	Rebecca W. Mahurin, Ph.D., Director				
Address	Tech Transfer Office MSU - Bozeman				
Address	P.O. Box 172460				
City	Bozeman	State	MT	ZIP	59717 - 2460
Country	USA	Telephone	406-994-7868	Fax	406-994-4152

**ENCLOSED APPLICATION PARTS (check all that apply)**

Specification Number of Pages 5  CD(s), Number     
 Drawing(s) Number of Sheets     Other (specify)     
 Application Data Sheet. See 37 CFR 1.76

**METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT**

Applicant claims small entity status. See 37 CFR 1.27. FILING FEE AMOUNT (\$)  
 A check or money order is enclosed to cover the filing fees  
 The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:    \$80.00  
 Payment by credit card. Form PTO-2038 is attached.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

 No. Yes, the name of the U.S. Government agency and the Government contract number are: \_\_\_\_\_

Respectfully submitted,

SIGNATURE TYPED or PRINTED NAME Denlyn K. AthertonTELEPHONE 406-994-7868Date 10/10/03REGISTRATION NO.  
(if appropriate)

Docket Number:

JDL-2002-GLUT**USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT**

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

Johnson, Duane L.; Stanislao, Bettie C.; Sands, David C.

Timothy (*Phleum pretense* L), A Gluten Free Cereal for Human Nutrition

Currently no patents using a bio-based production system have been developed. This product is being recommended for patent using the same protocol Archer Daniels Midland (Decatur, IL) used to patent "Enova", a cooking oil composed of diglycerides (rather than conventional triglycerides) which has been shown to fight body fat and obesity. Thus, a "food" having human health advantages can be patented.

We claim:

1. The use of seed from timothy grass (*Phleum pretense* L.) as a food-grade, nutraceutical source for flour, starch, malt, and non-gluten cereal-based products, or for other food and beverage uses.
2. The production of gluten-free, risen bread products manufactured from timothy seed.
3. The production of flatbread (non-risen) bread products manufactured from timothy seed.
4. The production of extruded cereal products manufactured from timothy seed.
5. The identification of timothy seed to be used as a nutraceutical cereal to be called "Timtana".
6. The use of sprouted timothy seed as a source of gluten-free malt extract for brewing.
7. The use of malted timothy in food and beverage products.
8. The use of timothy flour with a gum, such as xanthum gum, to replace wheat or other grain products in the diet of person with allergies or intolerances to wheat and/or other grains.
9. The production of fermented breads or bread products with timothy as a component.

Becky

## Intellectual Property Disclosure Form Cover Sheet

Creator(s) name: Duane L. Johnson, Bettie C. Stanislao, and David C. Sands

Title of intellectual property: Timothy (Phleum pratense L), A Gluten Free Cereal For Human Nutrition

Recommendations:

Department Head:

What is your opinion of the creation?

Names of others who could evaluate the intellectual property:

Creation was conceived wholly or partly on University time, solely on creator's time.

Dean: \_\_\_\_\_

Director: \_\_\_\_\_

Vice President for Research and Creative Activities: \_\_\_\_\_

Disposition by IPC: \_\_\_\_\_

Technology Transfer Office Director / Date: \_\_\_\_\_

Date sent to patent management organization: \_\_\_\_\_

Copies sent Department Head, Dean, Director, VPRCA: \_\_\_\_\_

## Intellectual Property Disclosure

Confidential Information  
(For use by Montana State University only)

1. Title or other designation of intellectual property: Timothy (*Phleum pratense L*), A Gluten Free Cereal Grain For Human Nutrition

2. Name of person making disclosure: Duane L. Johnson

3. Creator(s):

Name	Address	Department	Telephone
Duane L. Johnson	NWARC 4570 MT Hwy 35 Kalispell, MT 59901	Research Centers	406-755-4303
David C. Sands	AgBioSci 119 Montana State University, Bozeman, MT 59717-3150	Dept. of Plant Science and Plant Pathology	406-994-5151
Bettie Stanislao	122 Herrick Hall, Montana State University, 59717-3540	Health and Human Development	406-994-6075

4. Full description of intellectual property (if additional paper is needed, be certain to sign, date and have each additional sheet witnessed). PLEASE TYPE.

Timothy (*Phleum pratense L*) was first discovered by Jonathan Herd in New Hampshire in 1711. Known as "Herd grass", timothy was grown and spread westward across colonial America by Timothy Hanson. In 1747, a sample was sent to Benjamin Franklin in Pennsylvania who commented that a sample of Herd grass was mere "Timothy". It has been called Timothy ever since. Timothy became a major forage for the New England and Pennsylvanian colonies and was taken to England in 1763 for forage trials. Timothy appears to be native to northern Europe and U.S. production is limited to wetter regions of the Northeast, upper Midwest and Pacific Northwestern U.S. Its use is restricted to forage hay and newer types for pasture and lawns. Production of timothy declined rapidly between 1907 and 1971 as the number of horses and mules declined for the same period. There is no record of timothy seed being used as a human food or supplement.

Celiac Disease is characterized by gluten, a protein common to cereal grains such as wheat and barley, binding to genetically susceptible individuals intestinal tract. The gluten then typically reduces the ability of that person to absorb nutrition from digestion of other foods. The results can vary from flatulence to death. It is estimated that one per every one hundred and fifty people living in the United States (0.7%) expresses some form of gluten intolerance. Celiacs, therefore, must avoid products containing gluten.

We propose a novel use for timothy grass seed as a source of gluten-free flour to be used in a manner similar to wheat for the manufacture of risen and flat bread products. Timothy flour contains essentially no gluten (as determined by a Celiac ELISA test) and can be milled and baked in a manner similar to wheat. The seed tastes sweet and with nutty undertones. The flour is similar to wheat flour in color and texture. For risen bread products a rising agent, such as baking soda or baking powder, is required. Leavened breads produced by yeast and flour can also be produced. Timothy can be blended with other starch sources such as potato flour, rice flour or tapioca in formulation. These products are used as neutraceuticals for the control of celiac disease in human beings.

5. Intellectual Property utility or other application:

Neutraceutical

6. If intellectual property is an invention, do you believe it is patentable?  Yes  No

Basis for belief:  Patent Search

Opinion of patent attorney or others (please identify):

Others (please specify):

7. Do you believe or expect that the invention may have to be treated as a "trade secret" in order to commercialize it?  Yes  No

8. Manner in which intellectual property was made:

Dr. Duane Johnson found timothy seed in a field and tasted it after threshing the seed by hand. The seed had a nutty, sweet flavor. Seed was obtained from a forage seed production company and a sample milled for gluten content (standard ELISA test) at Montana State University. The sample contained one of the lowest gluten scores in the evaluation of standards and current starch sources currently in commercial use. Protein content of the seed was found to be in excess of 15%. A grain sample was milled at Montana State University and unidentified, gluten-free flour sample provided to an MSU dietician. The flour was then baked as a muffin for evaluation and found to be acceptable as a starch and protein replacement in gluten-free product manufacture.

9. University resources used in making or facilitating the creation of the intellectual property:

Laboratory or other facilities (please specify): Laboratory facilities at NWARC; laboratory facilities provided by the Department of Plant Sciences and Plant Pathology, Ag Sciences building

Equipment (please specify): Grain mill, flour mill- MSU campus

Personnel (e.g., lab technicians, secretaries, etc. Please specify): Dr. Duane Johnson, Dr. David Sands, Dr. Bettie Stanislao

Departmental funds (please identify department): Department of Research Centers; Department of Plant Science and Plant Pathology; Department of Health and Human Development

Research grants (please specify): none

Other University funds (please specify): none

Other University resources (please specify): Montana Agricultural Experiment Station. MAES funding for faculty salaries. Hatch funding for salaries. MAES funding for operating budget.

10. To your knowledge, is this or any similar intellectual property disclosed in scientific or other literature?

No

Yes (please identify source and, if available, attach copies):

11. Have you made any other disclosure of this intellectual property?

No  Yes

by publication (please specify and attach):

other (please specify): A farm cooperative (Amazing Grains) closely aligned with MSU has done some test milling.

12. To your knowledge, are there others who have assisted you in creating this intellectual property?

No  Yes (please identify person(s) and nature of assistance): Seed was originally identified from USDA Western Regional Plant Introduction Station, Pullman Washington (Ms. Vicki Bradley, curator). Dr. Bradley allowed me access to the world germplasm bank to collect seed.

13. To your knowledge, have students assisted you in creating this intellectual property?

No  Yes If so, please provide:

- A. Name and address of student:
- Undergraduate  Masters  Doctoral  Post-Doctoral
- C. Describe the manner in which the student assisted you:
- D. Will the student participation be referenced in his/her graduate thesis?  No  Yes

14. Are you aware of any other person or entity that is making or is likely to make any claim to this intellectual property?  No  Yes (please identify and explain):

15. Please identify whom you believe to be potential licensee(s) or purchaser of this intellectual property:

Amazing Grains, LLC (Ronan, Montana)

Have you made any contact or other communication with any of the above relative to this intellectual property?  No  Yes (please specify the nature of any correspondence):

We have approached Amazing Grains with an alternative cereal crop to Indian Rice Grass suitable for use in their products (general baking flour and pure seed flour).

Signature of person(s) making disclosure:

Name	Date	<u>Duane L. Johnson</u>	Date
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12/12/02

Signature of creator(s) (if different than person(s) making disclosure):

Name	Date	Name	Date
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Signature of witnesses:

Name	Date	<u>Barbara Honeycutt</u>	Date
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12/12/02

Signature of person to whom disclosure is being made:

Name	Date
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# Document made available under the Patent Cooperation Treaty (PCT)

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World Intellectual Property Organization (WIPO) - Geneva, Switzerland  
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse